

US009409572B2

# (12) United States Patent

Uno

## (54) DRIVE ASSIST SYSTEM, DRIVE ASSIST METHOD, AND DRIVE ASSIST DEVICE

(71) Applicant: Satoshi Uno, Tokyo (JP)

(72) Inventor: Satoshi Uno, Tokyo (JP)

(73) Assignee: TOYOTA JIDOSHA KABUSHIKI

KAISHA, Aichi-ken (JP)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/763,636

(22) PCT Filed: Jan. 22, 2014

(86) PCT No.: **PCT/IB2014/000058** 

§ 371 (c)(1),

(2) Date: Jul. 27, 2015

(87) PCT Pub. No.: WO2014/115016

PCT Pub. Date: Jul. 31, 2014

(65) Prior Publication Data

US 2015/0360685 A1 Dec. 17, 2015

#### (30) Foreign Application Priority Data

Jan. 28, 2013 (JP) ...... 2013-013519

(51) Int. Cl.

B60W 30/18 (2012.01)

B60W 30/00 (2006.01)

B60W 50/04 (2006.01)

G07C 5/00 (2006.01)

B60T 7/12 (2006.01)

B60W 30/02 (2012.01)

### (10) **Patent No.:**

US 9,409,572 B2

(45) **Date of Patent:** 

Aug. 9, 2016

#### (52) U.S. Cl.

CPC **B60W 30/00** (2013.01); **B60T 7/12** (2013.01); **B60W 50/045** (2013.01); **G07C 5/008** (2013.01); **B60W 30/02** (2013.01); **B60W** 30/18109 (2013.01); **B60W 30/18172** (2013.01); **B60W 2050/046** (2013.01); **B60W** 2550/402 (2013.01); **B60W** 2750/40 (2013.01)

(58) Field of Classification Search

None

See application file for complete search history.

#### (56) References Cited

#### FOREIGN PATENT DOCUMENTS

JP	2006-195579 A	7/2006
JP	2009-029343 A	2/2009
JP	2011-013895 A	1/2011

Primary Examiner — Thomas Tarcza Assistant Examiner — Garrett Evans

(74) Attorney, Agent, or Firm — Sughrue Mion, PLLC

#### (57) ABSTRACT

A drive assist system includes: a movable body (20) in which drive assist is performed by an assist device (40, 50, 60) and which includes a movable body holding unit (23); an external holding unit (14) located outside the movable body (20); and a controller (22) configured to determine whether or not an operation position where the assist device (40, 50, 60) operates is related to the operation of the assist device (40, 50, 60), select the external holding unit (14) as a unit in which the operation result of the assist device (40, 50, 60) is to be held when it is determined that the operation position is not related to the operation of the assist device (40, 50, 60), and select the movable body holding unit (23) as the unit in which the operation result of the assist device (40, 50, 60) is to be held when it is determined that the operation position is related to the operation of the assist device (40, 50, 60) is to be held when it is determined that the operation position is related to the operation of the assist device (40, 50, 60).

#### 9 Claims, 4 Drawing Sheets

